

## THE TAYLOR RULE OF MONETARY POLICY AND ITS IMPLICATIONS- A GRAPHICAL PRESENTATION

Dr. Satyajeet S Deshpande  
Principal, J G College of Commerce, Ahmedabad

### Abstract

The current paper attempts to present the famous Taylor rule relating to the real rate of interest during high inflation. The rule tells us about the direct relationship between the inflation rate and the real rate of interest. Since the real GDP is inversely related to the real interest rate, a high rate of inflation indirectly causes the real GDP to fall.

The paper is divided in to four sections. The first section describes the Taylor or Monetary policy rule. The second section shows the outcome of the Taylor rule on the various components of aggregate expenditure like consumption, investment and net exports. The third section graphically presents the inverse relation between the rate of inflation and real GDP. The final section illustrates the implication of these inter-connections to the economy. The paper makes extensive use of graphs and charts to show relationships between different variables.

**Key Words:** Taylor Rule, Monetary Economics, Real Rate of Interest, Rate of Inflation, Real GDP

### 1. MEANING OF TAYLOR RULE

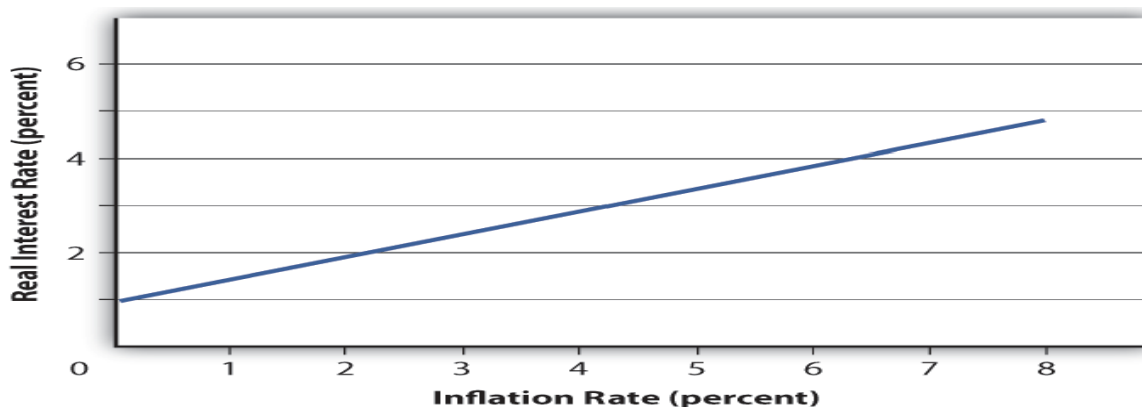
The Taylor Rule is an 'interest-rate forecasting model' invented by the famous economist John Taylor in 1992. In his 1993 study, "Discretion Versus Policy Rules in Practice", he suggested how central banks should change interest rates to deal with inflation and other economic conditions.

The monetary policy rule is that when the rate of inflation increases, the central bank increases the real rate of interest and vice-versa.

The Reserve Bank should raise real rate of interest when inflation is above the target or when gross domestic product (GDP) growth is too high and above the potential.

On the other hand, the Reserve Bank should lower the real rate of interest, when inflation is below the target level or when GDP growth is too slow and below the potential.

The direct relation between the 'real interest rate' and 'inflation rate' can be shown through a diagram as below.

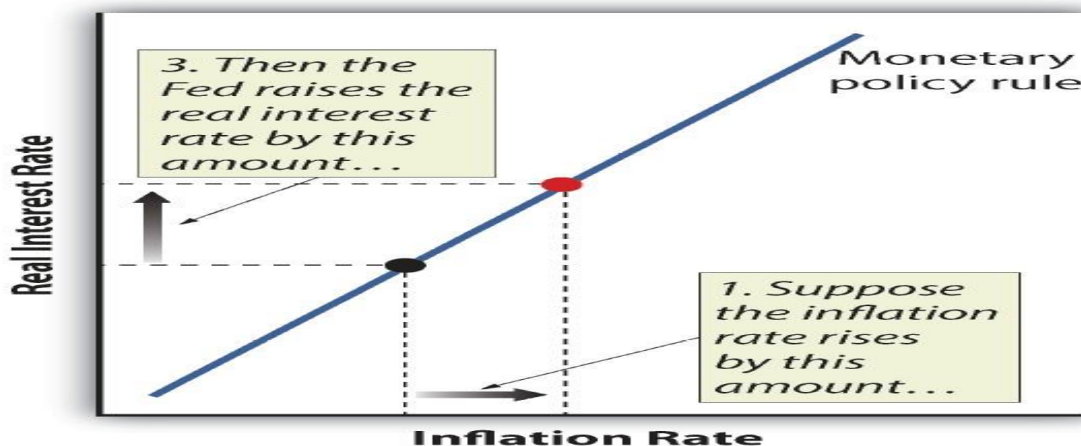


### 2. OUTCOME OF TAYLOR RULE

When the rate of inflation rises beyond the targeted rate, the central bank would increase the real interest rate. This increase in the interest rate would reduce the aggregate demand or real GDP.

This implies that when the inflation rate crosses the target rate, we can expect the central bank to intervene in such a manner that the real GDP will fall sooner or later. This happens due to increase in the interest rate by the central bank to arrest the rate of inflation.

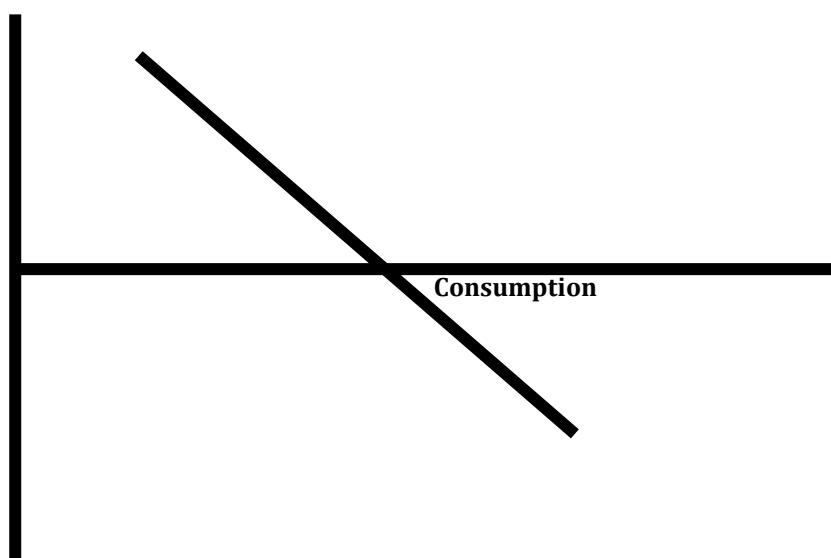
The monetary policy rule diagram shows that whenever the inflation rate rises, central bank increases the real interest rate.



Now, the real GDP has got four main components-Consumption expenditure (C), Investment expenditure (I), Government expenditure (G) and Net Exports (X). All these components have an inverse relationship with the real rate of interest.

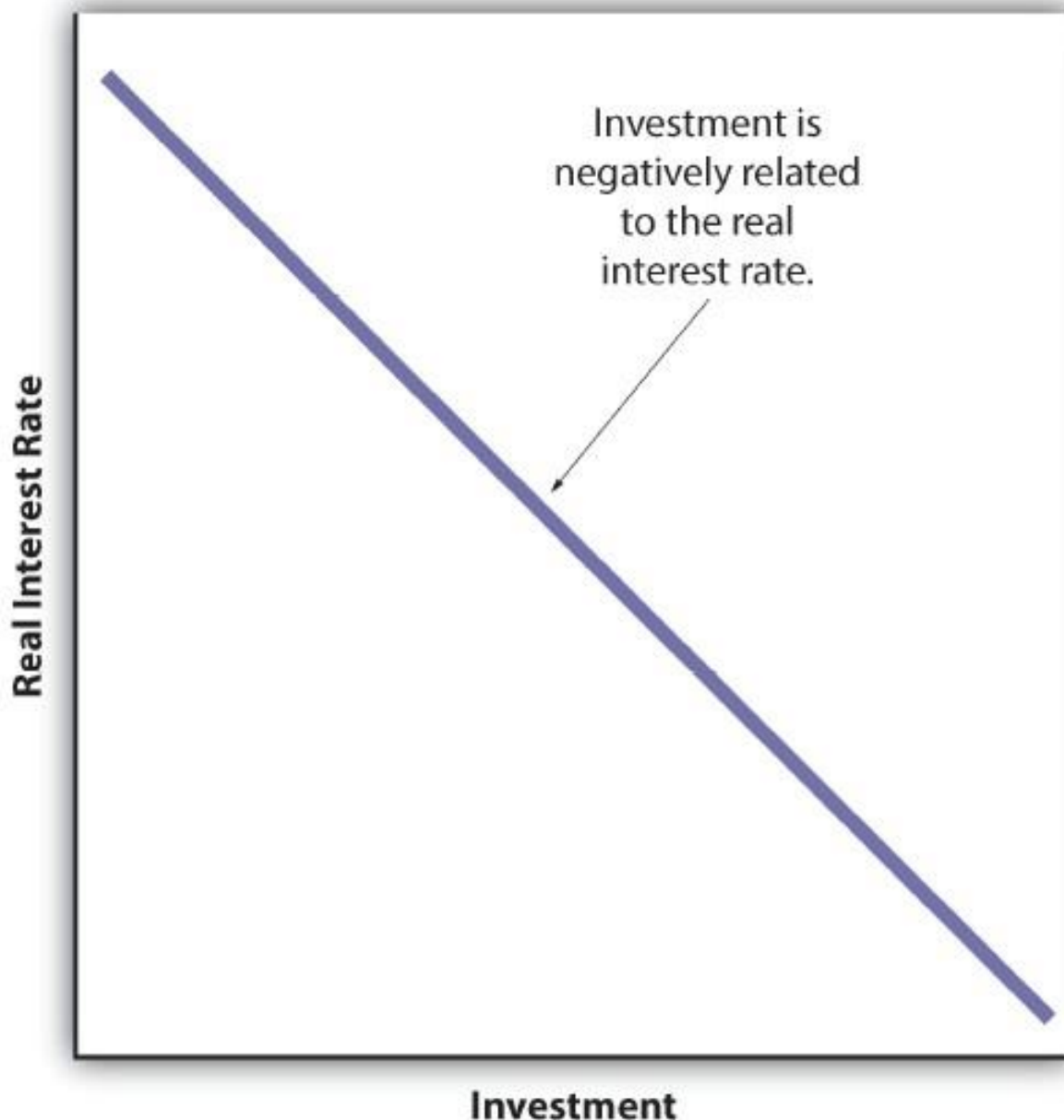
- a. **Negative Relationship between Interest Rate and Consumption:** Evidence indicates that higher real interest rates encourage people to save a larger fraction of their income. Higher real interest rates encourage people to save because they earn more on their savings. Because more saving means less consumption, this implies that consumption is related negatively to the interest rate. The inverse relationship between the real interest rate and consumption is shown in the diagram below.

b. **Real Interest Rate**



- b. **Negative Relationship between Interest Rate and Investment:** Investment is the component of expenditure that is probably most sensitive to the real interest rate. Many firms must borrow funds to pay for such investments. Higher interest rates make such borrowing more costly. Firms considering buying new capital goods will be less inclined to purchase such investment goods if real interest rates are higher.

The inverse relationship between the real interest rate and investment is shown in the diagram below.



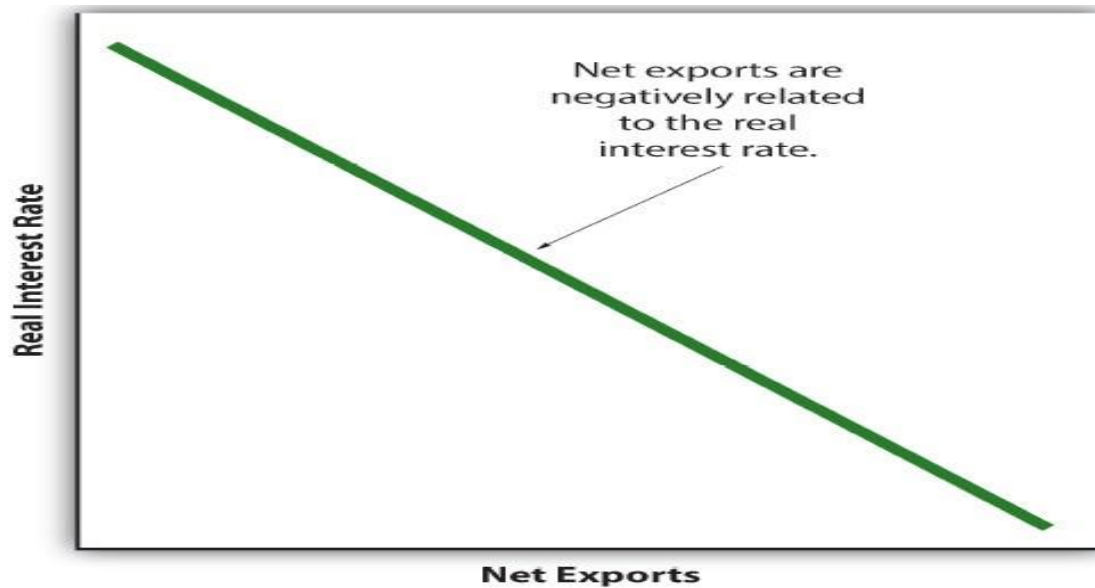
c. **Negative Relationship between Interest Rate and Net Exports:** To understand this relationship, we first study how the real interest affects the value of the domestic currency. We then study how the value of the domestic currency affects net exports. A higher real interest rate in the India compared with other countries increases the demand for Indian Rupee as the bank accounts in India will pay higher interest rate. That increased demand bids up the price of rupee; hence, the exchange rate—the price of rupee—rises.

With a higher exchange rate (appreciation of Indian rupee), Indian-produced exports become more expensive to foreigners, who must pay a higher price for Indian rupee, and with a higher exchange rate, imported foreign goods become cheaper for Indians, who can get more foreign goods for higher-priced rupee. Thus, higher real interest rates reduce net exports.

Value of the Domestic Currency		Net Exports
up	→	down
down	→	up

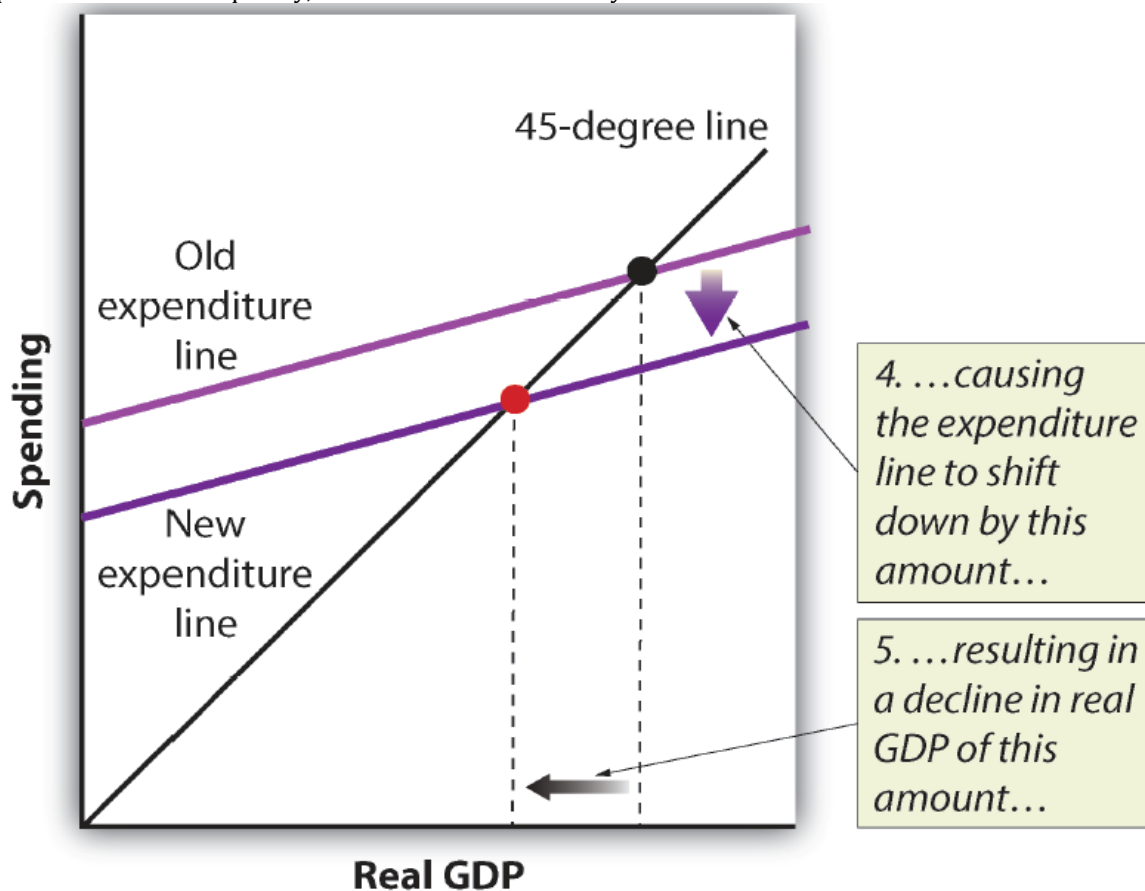
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d. The inverse relation between 'interest rate' and 'net exports' is shown as under.



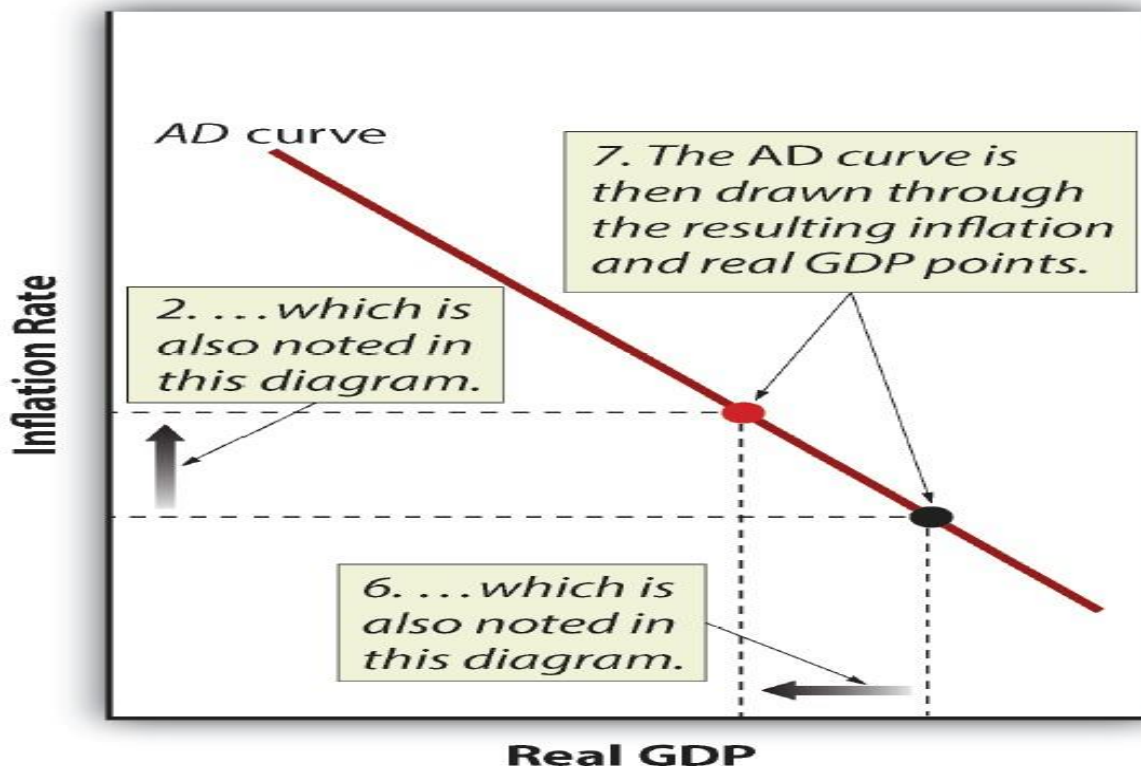
**3. GRAPHICAL PRESENTATION OF THE INVERSE RELATION BETWEEN RATE OF INFLATION AND REAL GDP**

The impact of reduced expenditure (C+I+X) in the economy on the real GDP is shown below. The old-expenditure line in the following diagram corresponds to a high rate of inflation. As per the rule, the central bank will reduce the real rate of interest. This will shift the old-expenditure line downwards to new-expenditure line. Consequently, the real GDP in the economy falls.



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Finally the AD curve showing the inverse relationship between the 'Inflation Rate' and 'Real GDP' can be shown as below.



#### 4. IMPLICATIONS OF THE TAYLOR RULE

All this implies that if the rate of inflation exceeds the target rate quite frequently, the central bank of the country will have to raise the interest rate due to which it will be difficult to maintain the real GDP at the existing level. Even if the real GDP doesn't fall, the growth-rate will become less. So in order to maintain a healthy growth rate in the economy, the rate of inflation should remain low. This calls for healthy supply side policies which ensure high productivity and output in the economy. If the government can remove various supply side bottlenecks, a greater output will ensure low rate of inflation, which in turn will allow the central bank to keep the real interest rate at low level. This will ensure a healthy real GDP.

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